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Stages of Drawing and Intelligence

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Foreword

This report transmits the presentation by Fintan Kavanagh, Ph.D. on the subject of the process by which the developmental stages of children's drawings are influenced by their environment. This report outlines a pathway for future research by which more in-depth comparisons of children in military families might be compared with their civilian counterparts.

Dr. Kavanagh is a noted author in this field, and his presentation to the World Congress of the Organization Mondiale pour L'Education Prescolaire continues his long term work in research and teaching.

A handwritten signature in black ink, reading "Michael D. Shaler". The signature is written in a cursive style with a large, stylized 'M' and 'S'.

Michael D. Shaler
Director

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About the Author

Fintan Kavanagh, Ph.D., is an Associate Professor and Director of Early Childhood Education at Marywood University where he has taught undergraduate and graduate courses since 1973. His area of expertise is child development and in recent years he has presented papers at international conferences in Wales, Ireland, Austria, Finland, Czech Republic, and Hungary.

Dr. Kavanagh presented this research paper at the 22nd World Congress of OMEP in Copenhagen, Denmark, August 1998.

Introduction

Children's drawings follow a developmental sequence. Beginning with uncontrolled scribble, children progress to controlled scribble, through basic forms, to increasingly sophisticated modes of representation. While different researchers describe the stages somewhat differently, there is general agreement that definable stages do exist and are easily observable. The environment must, however, provide access to the necessary materials as well as opportunities for expression. The extent to which the environment facilitates the evolution of art in children is a critical consideration. The tendency of children to represent their world in this way appears to exist across cultures.

As part of the developmental process, children integrate their various skills as they draw. The motivation to represent in drawings what they see causes children to sharpen their perceptions and increase their fine motor skills. As they create, they also coordinate, e.g., eye and hand. While the process is artistic, it may also be seen as cognitive, as an indicator of the child's growing intellectual competence.

Like their civilian counterparts, children in military families express themselves in drawing. Their graphic representations serve several purposes: they show the child's growing intellectual and cognitive development, they are a language and communication system, and they offer a means of counseling and therapy.

Stages of Drawing and Intelligence

as presented
August 13-16, 1998

The Child's Right to Care, Play, and Education
World Congress of OMEP
(Organization Mondiale pour L'Education Prescolaire)
Copenhagen, Denmark

I would like to take the liberty of defining intelligence very broadly as effectively coping or effectively responding to one's environment. This represents a departure from traditional or classical notions of intelligence, such as the psychometric. It follows instead a newer line of thinking where intelligence is expanded out to conform more closely and more realistically to the demands of real life. Perceived in this way, intelligence is akin to competence in the art of living and the fulfillment of one's own potential as a person. As such, it integrates elements which are cognitive, aesthetic, physical, social, emotional, personal, and spiritual (Coles, 1997, Feeney & Moravcik, 1987, Gardner, 1983, Goleman, 1995, Lowenfeld & Brittain, 1987; Sternberg, 1997).

In general, children's drawings are a reflection of their intelligence, when intelligence is defined in this way. The artistic expressions are a window to their world. Through their art they may often say what is impossible for them to say through language, either because words cannot express what they feel or because language for them is at an early stage of development. The underlying self is expressed in a remarkably spontaneous way, and with a true artist's motivation and intensity. In contrast to this is the adult attitude. Too often the efforts are devalued or misconstrued, the adult being unable to enter the child's world. The drawings may be seen as trivial or as activities for a rainy day. They may be seen as 'fillers' with no real significance. The noticeable decline in creativity in the school-age child may be due, in part, to the adult influence intruding upon her artistry; the mismatch between adult and child.

The process of artistic expression can itself become a vehicle for the development of intelligence. The mismatch of adult and child can be replaced by a blending of adult and child. The child, when left in peace to complete her work at her own rate, should be given time for reflection by the adult even when the work is complete. She must be able to add to it or change it without interference from the adult. After this a dialogue can occur, usually initiated

by the child. The dialogue assumes a rapport in the form of a warm supportive relationship between the child and the adult. At the heart of the relationship is authenticity. The drawing becomes a conversation piece, but the artist maintains complete ownership of it. What emerges is a unique form of communication and a unique construction of meaning by the child.

It should be noted that the other person in the relationship will vary depending on the situation: teacher, parent, therapist, psychologist, pediatrician, or sibling. When the other is an age-mate and the interaction is child-to-child, it is important that they respect each other and be sensitive to each other (Mayesky, 1998).

Through artistic expression, the young artist connects with current and future academic demands, especially language and number.

With the discovery that marks may be used to depict objects and events, to memorialize, document, and anticipate experiences, the child enters a period of development in which the narrative possibilities of visual form become and remain preeminent (Thompson, 1990, p. 229).

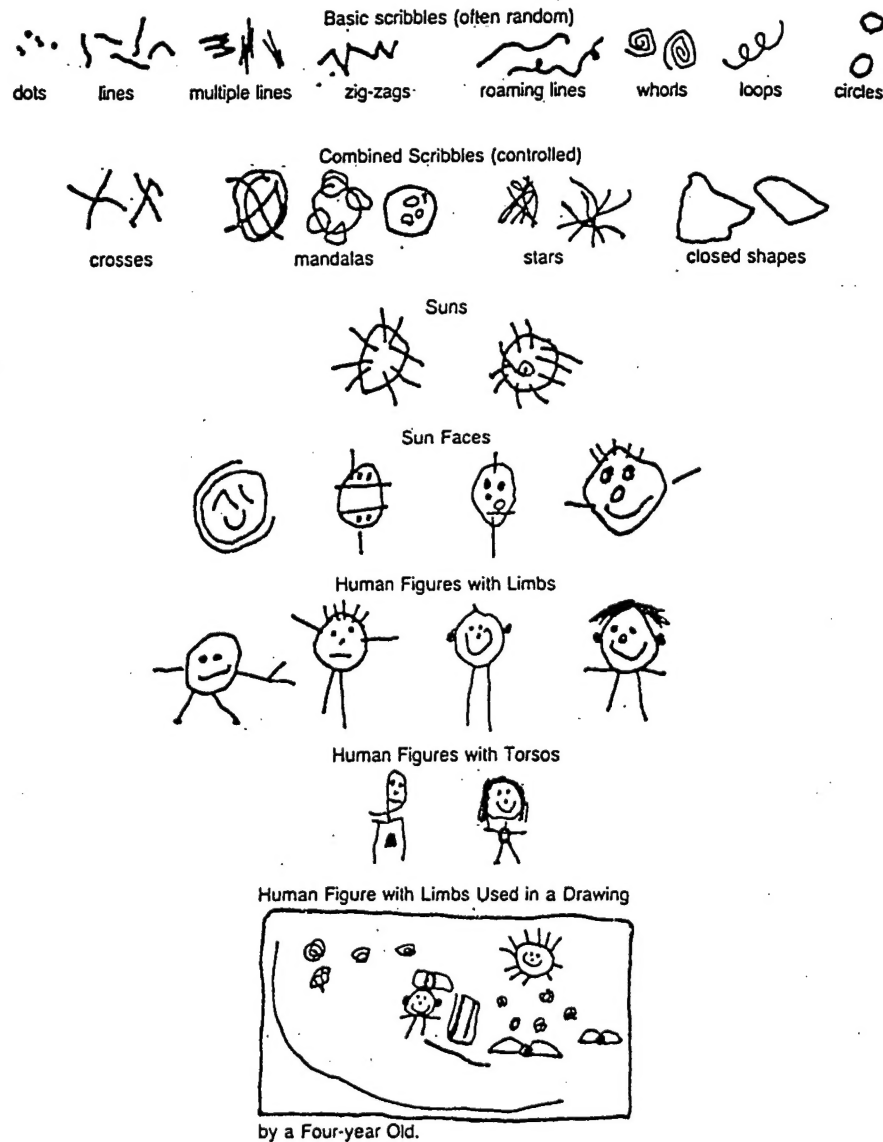
The drawing phenomenon begins early, progressing through recognizable stages. Given the opportunity, the two-year-old scribbles on whatever is there; paper, cardboard, walls, floors, fences, or in the sand with her finger. In the artistic expressions of the three-year-old, geometric forms emerge. The four and five-year-old go on to produce representations of their world; houses, people, animals, trees. All of this is accomplished spontaneously and without the benefit of teaching. Breaking through as a natural impulse, it needs no prompting. It is natural to children everywhere, and, furthermore, the productions of children across cultures are strikingly similar; children in Korea and Texas draw houses in much the same way and that look alike (Gardner, 1980; Kellogg & O'Dell, 1967). Nor does the passing of time change the way children draw; these drawings, almost 100 years apart, demonstrate this.

Figure 1 shows the similarity 1885/1967. The transparency or x-ray technique is observable in both (Di Leo, 1970, pp. 104-105; Di Leo, 1996, cover).



Notice the similarity between the two drawings. Children use the same strategies regardless of the passing of time. Animals are drawn in a way that is characteristic of children.

Figure 2 shows the stages in greater detail (Feeney, Christensen, & Moravcik, 1996, p.352).



Notice here what children like to draw at each age level. Some of these markings and designs are reminiscent of what archaeologists find e.g., the spiral.

Figure 3 shows a different rendering of the same progression (Peterson & Hardin, 1997, p. 22).

APPROX. AGE (YRS.)	DESCRIPTION OF DRAWING	CHARACTERISTIC DRAWINGS
0-1	The infant has a reflex response to visual stimuli. The crayon is brought to the mouth but the infant does not draw.	
1-2	At approximately 13 months, the first scribble appears: a zig-zag. The infant watches the movement of the crayon leaving its marks on the surface.	
2-4	Circles appear and gradually predominate. The circles then become discrete. In a casually drawn circle, the child envisages an object. A first graphic symbol has been made, usually between 3 and 4 years old.	
4-7	In this stage of intellectual realism, the child draws an internal model, not what is actually seen. The child draws what is known to be there. Transparencies, such as showing people through walls and hulls of ships, are commonly produced. Drawings at this age are expressionistic and subjective.	
7-12	During this stage of visual realism, subjectivity diminishes. The child draws what is actually visible. Human figures are more realistic and proportioned. Colors are more conventional. The child distinguishes the right from the left side of the figure drawn.	
12+	With the development of the critical faculty, most children lose interest in drawing. The gifted tend to persevere.	

Young children are prolific artists. As they grow older, they are less prolific. At school age there is a noticeable decline in creativity. However, the progression is still easy enough to trace.

Every normal child, progressing at her own rate, goes through this sequence. Assuming that art opportunities have been provided, she will draw her world as she knows it at her current developmental level. Although prompted to draw by the visual experience of some person or some thing, she will draw what she knows to exist rather than what she sees to exist. She may even disregard the model (person or thing) present before her, depending instead on what she knows and what she feels (intellect and emotion). We are all familiar with the x-ray or transparency, whereby hidden parts are shown in the picture (one sees through a horse or the side of a boat to view a leg). Less obvious is the part which is drawn larger for emphasis. It may be something which the child likes (an apple on a tree) or something which the child dislikes (a big hand bearing downward on him). The drawing is an impression; emotion is expressed in situations which are emotionally laden, but considerably less evident in those which are relatively free of emotion. The delicate interplay of intellect and emotion as seen in the drawing is a replica of what is being experienced in real life (Di Leo, 1970).

Children's drawings have been studied for about 100 years with a view to unlocking the nature of human intelligence. It has been shown repeatedly that the drawings are in the nature of a progression, paralleling cognitive development. As the child grows older, her drawings evolve in a variety of interesting ways. One attempt at assessing intelligence based on the drawing of a human figure was the Goodenough-Harris drawing test, which claimed to measure the increasing complexity of the child's conceptual ability by noting the amount of detail in the picture (Harris, 1963). But the evidence for a relationship between children's drawings and intelligence comes mainly from the pioneering work of Piaget and Inhelder (1948), who set the stage for later studies by describing basic developmental stages of drawing. The type of intelligence being referred to here is Piagetian; it would conform to Piaget's definition of intelligence (Chappell & Steitz, 1993).

Significantly different is my broad definition of intelligence, and, as noted earlier, it is in line with more recent conceptualizations of the nature of intelligence. But regardless of what definition one follows, there are serious problems inherent in generalizing about intelligence, personality, or emotions from the individual's productions, if these are looked at in isolation. On the contrary, drawings should be studied in conjunction with other pertinent data. Even in the hands of a skilled clinician, they can never be regarded as a quick assessment instrument or a direct line to underlying processes. Some of the reasons for this limitation are:

- severe restrictions in home environment
- inadequate parenting
- extreme poverty.

A validation of this is the range in stages or levels of artistic expression as seen in a preschool head start class.

What can one say about the drawings of children in military families? It is necessary to distinguish between times of stress and times of peace and tranquility. The same distinction must be made for children in the civilian population. In both populations, stress causes an interruption in development, which is reflected in artwork. While the two populations differ in many respects, they are more alike than different; children for the most part maintain the same characteristics regardless of their situations. One can cautiously apply research findings from civilian populations to their military family counterpart.

A limited number of research studies are specific to children in military families. However, in the area of my investigation, the scarcity of relevant data and relevant findings caused me to rely heavily on the mainstream non-military studies. Dr. Joel Teitelbaum, Department of Military Psychiatry, Walter Reed Army Institute of Research, Washington, DC clarified a number of issues, especially those relating to research concerning U.S. military families. Points discussed included the strict protocol observed by the U.S. military in the authorization of research and the vulnerability of "captive populations." In short, the need for precise information describing the children of U.S. military families has to be balanced against the need for protection from intrusion. Hence, the limited availability of that material which I was actively pursuing (Teitelbaum, 1998).

One area of special interest to military families is the way in which children perceive war, as reflected in their drawings. While numerous studies have focused on the effects of war on adults, only a limited number have been directed towards children. In the case of children, the available evidence indicates that war-related effects may exist, even when the conflict is in a distant country. It has also been shown that separation from loved ones, such as would happen through deployment of a parent, may impact negatively on children. When exposure to war is prolonged or when there are preexisting emotional conditions, the risk factor is significantly greater. In contrast to this, children who are stable and secure fare remarkably well in many instances. A constant flow of anecdotal information from troubled areas around the globe would appear to confirm such findings (Costello, Phelps, & Wilczenski, 1994).

The impact of severe trauma is graphically described by Tanay (1994). He studied the artistic expression of 35 displaced Croatian and Bosnian children, focusing on two age groups: intuitive symbolic (ages 4 to 7) and concrete operative (ages 7 to 11). He described the younger children as being aggressive

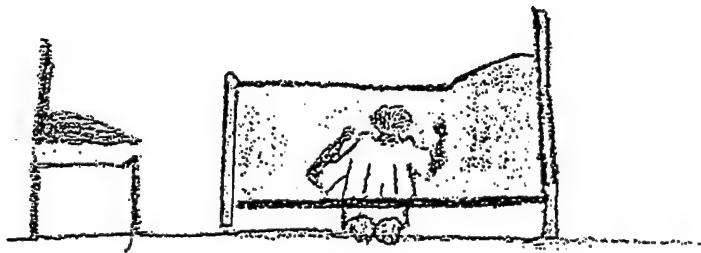
towards toys, frightened of adults, frightened of being left alone, and suffering from nightmares; the older children were anxious and could not concentrate on what they were doing. Their trauma was like an interruption in development and manifested itself clearly in their drawings. The most severe cases resembled post-traumatic stress disorder. Examples of traumatic symbolization were monster-animals (such as sharks and mutilated figures) and over-emphasized heart shapes (hidden danger). Tanay states:

In comparison with the work of children not suffering from such traumas, the treatment of space is regressive; houses and people are simplified and shown along the bottom edge of the paper. The roofs become steep and pointed as in the preoperational phase of cognitive development (1994, p. 239).

As children come to terms with the realities around them, they often go far beyond what could be considered cognitive or emotional; they reach out to power which they perceive as being greater than themselves. They explore spiritual possibilities. Each child will deal with the spiritual element in her own way, conditioned by her education, culture, and experiences. The section which follows is an example of how spirituality assists the individual in coping with a difficult situation.

Traditionally, the spiritual element has not been associated with cognitive development. But numerous studies have shown that there is a spiritual quality inherent in the development of children. While it bears some relationship to religious development, it should not be seen as identical to it. Like the other forms of development previously mentioned, it shows up in a variety of interesting ways in the drawings of children. A particular instance described by Robert Coles (1992) will serve as an illustration (Figure 4).

Figure 4 (Coles, 1992, p. 61)



In the original version the little girl draws herself in color (color not shown) and then describes her predicament. Notice the way in which drawing and language are combined; they form a unity. The drawing, the language, and the thought form a spiritual framework. The little girl is able to transcend material things and this in turn allows her to cope more effectively. Would you want to think about this ability to cope as a form of intelligence? Are there other less obvious examples of this?

In order to preserve the flavor of what was said, I will give you this somewhat long quotation. Meanwhile, you will be able to see the girl's drawing (the original drawing was in color, which is indicative of the intensity of feeling she was experiencing).

At twelve, Leola had seen very little of the world, even of her own rural Georgia world. A black girl born to poor farming people, she was also paraplegic—and yet:

I can think and I can dream and I can pray and I can let my mind go anyplace it wants, so I've been all over. Mostly, though, I try to stay here and hope God will smile on me, so I can keep my spirits up and show Him it was worth His while, to put me here. Every once in a while, I get in a mood, and I want to go traveling. So I do—I just close my eyes, and I imagine myself with wings, and I'm up there in the sky, like a hawk, and I'm circling and circling, and finally, the good Lord, He will tell me, 'Child, rest your wings (and your legs, too!) and go back home.' So, I do.

When I pray to God, I'm usually tired at first, because I have to get myself over to the bed [where she likes to pray, and does so four or five times a day] from the chair [where she otherwise sits], and I'm worn down [she crawls, using the considerable power she has developed in her arms], but it doesn't take long for praying to refresh me. I close my eyes, and I'm lost to myself and I'm with God. That's what Nanna [her grandmother] says should happen: 'You leave yourself Leola, and take that long trip [in prayer] to the good Lord.' When I come back [at the end of her prayer] I feel as if I've been everywhere and I've seen everything—because that's what God is. He's everywhere, and He's everything.

The self-effacement she describes gets worked into her drawing to the point that, as she hands it to me, she lets me know this: "When I'm praying, I'm not me, I'm one of God's little ones." This lesson, learned from devout parents and grandparents, becomes an artist's challenge to realize—a challenge she rose mightily to accept (Coles, 1992, p.60).

Summary

I have focused on the role of children's drawings in both the study of intelligence and the development of intelligence. I have taken the liberty of defining, or rather redefining, intelligence in such a way that it is much more inclusive than the psychometric formulation with its IQ score. I have tried to give intelligence a wider meaning and a greater usefulness, touching on all the known areas of human experience. It is worth pointing out that my definition corresponds to what research has found over a 100-year period in the drawings of children: elements which are cognitive, aesthetic, physical, social, emotional, personal, and spiritual. At least as important as the content is the way in which actions, thoughts, and feelings are integrated into a consistent whole.

Stages, developmental levels, or the evolution of artistic expression (if one prefers that term) demonstrate that dynamic vital process begins with scribbling and reaches various forms of representation with the passing of time. The biological impulse, present in all children, combines with the environment to produce a drawing or a construction. From there the artist can intelligently go on to use symbols, usually associated with literacy, to include reading, writing, and mathematics, as if in some small way retracing civilization. Drawing is the language or communication system which compliments spoken language; the merging of these two produces interesting results, especially when children talk about their drawings.

For the children of military families, drawing lays open some interesting possibilities. Some of these are:

- drawing as an avenue for the cultivation of intelligence (same as for the civilian population);
- drawing as an indicator of intelligence, broadly defined, and making some limited use of developmental levels;
- drawing as a therapeutic experience, assisting children in dealing with whatever stresses the situation presents (deployment of parent or other family member, travel, television coverage of conflict, cultural differences, understanding of conflict).

While studies of non-military families yield useful information, one should not lose sight of the unique needs of military families. The scarcity of data specific to the children of military families in areas such as the one in this study points to a need for additional research to complement what currently exists.

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